REMARKS/ARGUMENTS

Claims 1-31 are pending in the application.

Claims 16-31 of this group stand as being allowed. This is announced in the captioned Examiner's Action. Claims 1, 8, 11, 12-14 of the application stand as being rejected with rejection being based on 35 U.S.C. 102 (b) in view of a newly cited reference, the published application of Gorokhovsky, 2002/0007796, a reference also identified in applicants' original disclosure statement. The Examiner's Action indicates claims 2-7, 9, 10 and 15 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Examiner's Action also indicates Examiner Rodney McDonald to be awaiting remarks concerning the applicability of the Gorokhovsky reference.

Turning then to rejected independent claims 1 and 12 and the Gorokhovsky reference, applicants understand this published application reference has now issued as U.S. Patent 6,663,755. One difference between the published application and this issued patent appears to be the improved quality and readability of the drawings included in the issued patent. Since the issued patent has eliminated the Examiner's Action employed paragraph identification numbering however the present discussion continues in identifying specific references to the Gorokhovsky document in the form of application paragraph numbers. In referring to Gorokhovsky patent paragraphs these paragraph numbers are enclosed in brackets i.e., [] herein.

The Gorokhovsky reference concerns a filtered cathode arc plasma source, a plasma source inclusive of a right angle particle path bend filter, magnetic field inclusive particle segregation and possibly other details bearing similarity to applicants' invention. These details include several instances wherein magnetic fields and magnetic cusps are discussed-without however drawing appearance. Applicants submit differences between the Gorokhovsky apparatus and the present invention are present and are significant with respect to the present discussion.

One difference involves the Gorokhovsky apparatus employing a combination of magnetic and electrostatic fields in plasma filtering in contrast with the largely magnetic filtering of applicants' invention. While applicants' invention uses an electrode 20 in FIG. 1 to achieve a trap for unwanted particles, applicants' magnetic flux patterns and steering of particles may be observed to rely on externally applied magnetic fields. This arrangement

is in contrast with the source 26a energized deflecting electrode 50 and repelling electrode 60 appearing in FIG. 3 and several of the later Gorokhovsky drawings and as are described in paragraphs [0091] and [0092] of the Gorokhovsky text.

Another distinction concerns the Examiner's Action referred-to focusing coil or conductor 21 appearing in several of the Gorokhovsky drawings—such as FIG. 3a, and referred-to in the Paragraph [0090]. As shown in the FIG. 3a drawing, this coil is disposed adjacent the output end of the plasma duct 46 where its purpose is said to be focusing in order to "substantially cancel the deflecting magnetic fields generated by the deflecting coils 20", paragraph [0090]. Notably the location of the coil 21 is at an extreme end of the plasma output duct 46 and is as remote from the right angle intersection of plasma chamber 44 and plasma output duct 46 as appears possible. A similar location for focusing coils 21 also prevails in other drawings of the Gorokhovsky document.

Another difference with respect to the Gorokhovsky plasma device concerns the orientation of deflecting coils 20 with respect to the plasma chamber 44 and the plasma output duct 46. In FIG. 3a it may be observed that the coil 20a and 20b single plane portions of coil 20 encircle only the plasma source chambers and no part of these coils encircle the plasma output duct 46 in its region adjacent the right angle interconnection of plasma chamber 44 and plasma output duct 46. Similar arrangements appear in the other Gorokhovsky drawings including the several views of FIG. 8 for example where both deflection coils 20 and focusing coils 21 in fact occupy the above described locations.

These coil 20 and 21 locations are in contrast with the magnetic coil arrangement in applicants invention and in particular with the arrangement of applicants' first and second correcting coils 17 and 18 since applicants' coils 17 and 18 include portions attending both plasma input duct 11-12 and plasma output duct 9. Nothing in the Gorokhovsky patent appears to anticipate the structure or the function of applicants' coils 17 and 18. The magnetic field lines smoothing contribution of these coils 17 and 18 is described in at least applicants' paragraphs 0096 and 0098 and in the related drawings especially FIG. 6c; and FIG. 6b.

In applicants' rejected claim 1 the adjustment nature of coils 17 and 18 is recited in terms of

"magnetic field lines adjustment magnetic coils"

in the claim paragraphs 8 and 9. The smoothing of magnetic field lines is recited in these paragraphs also. Moreover in claim 1 the supplementary function of coils 17 and 18 is

recited. The Gorokhovsky patent discusses magnetic field lines and magnetic cusps but is somewhat unspecific as to the contour of these lines and instead shows only a plurality of particle path indicating drawings. Clearly coils such as applicants' coils 17 and 18 and their recitation as "magnetic field lines adjustment magnetic coils" are not disclosed in the Gorokhovsky reference patent.

In a somewhat similar manner the Gorokhovsky patent includes considerations of generated plasma losses but does not use the combination of coils, especially the coils 17 and 18 disclosed in applicants' invention and recited in applicants' rejected claims, in minimizing such losses. The Gorokhovsky plasma loss limiting efforts are accomplished with the combination of electrostatic field generating electrodes (30, 32, 49, 50, 60 etc., paragraphs [0098] and [0134]) together with coils 20 and 21 as is in contrast with applicants' claim recited multiple coils combination.

With respect to rejected claim 12 applicants submit that the addition of an output duct entrance disposed coil and corrective flux to an existing flux pattern as accomplished by applicants' coils 24 and 17-18 are also not disclosed as a total combination in the Gorokhovsky patent. The coil 21 cited in the Examiner's Action is, as previously noted, a focusing coil and is disposed at a location appearing as far as possible from the right angle bend of the particle filter rather than at the output duct entrance as suggested in the Examiner's Action.

In addition the claim 12 last paragraph recitation of

> "...multi planar corrective magnetic coil element flux sources of selected flux configuration and flux magnitude disposed adjacent said right angle bend of said filter apparatus..."

is believed to distinguish over the Gorokhovsky coils 20a and 20b relied upon in the Examiner's Action. For example the Gorokhovsky coils 20a and 20b are each of single plane rather than the multiple plane flared structure shown in e.g. applicants' FIG. 2 and moreover these Gorokhovsky coils are identified as deflecting coils rather than corrective coils as is described with respect to applicants coils 17 and 18. Applicants also note that the

> "curvilinear pattern of plasma flow controlling equipotential magnetic flux lines within said right angle bend-inclusive plasma magnetic filter apparatus"

clause of the third paragraph in claim 12 is not found in the Gorokhovsky reference patent, especially in view of the absence of magnetic flux line disposition representations in the Gorokhovsky patent drawings. Applicants have discussed equipotential flux lines in

specification paragraph 0085 and have sought to indicate the flux line contribution of specific coils in their invention in the series of FIG. 6 drawings.

Claims 1 and 12 as discussed herein, if found to be allowable, are submitted to alone be sufficient to carry the claims dependent thereon to the level of patentability without the added limitations of the dependent claims. Applicants therefore propose to delay modification of these claims in response to the would-be allowable indication in the Examiner's Action until a determination of each parent claim is known.

In summary both the overall thrust of applicants' invention and plural specific details of this invention appear sufficiently distinguished over related attributes of the Gorokhovsky patent particle source as to allow issuance of the present claim 1 and claim 12 and the claims dependent thereon in company with the previously allowed claims as a U.S. Patent. Reconsideration of the 35 U.S.C. 102 rejection is therefore solicited.

Allowance of all claims and passage of the application to issuance are therefore respectfully solicited.

Respectfully submitted,

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